In the Drawings:

The attached sheets of replacement Formal Drawings replace the previously filed informal drawings.

REMARKS

The Office Action mailed May 27, 2005, has been received and reviewed. Claims 1 through 41 are currently pending in the application, of which claims 1 through 14 and 25 through 39 are currently under examination. Claims 15 through 24, 40 and 41 are withdrawn from consideration as being drawn to a non-elected invention, and have been canceled herein. Applicants have amended claims 1, 2, 3, 4, 5, 12, 25, 29, 31, 33 and 34, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 112 Claim Rejections

Claim 12 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants have amended claim 12 to overcome the rejection, and reconsideration and withdrawal of same is respectfully requested.

35 U.S.C. § 102 Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,140,151 to Akram

Claims 1 through 6, 10 through 14 and 29 through 34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Akram, U.S. Patent No. 6,140,151 (hereinafter "Akram"). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Amended claim 1 recites a method for supporting wafers for singulation and pick-and-place. The method comprises providing a semiconductor wafer; mounting an adhesive-coated tape to a surface of the semiconductor wafer;gripping the semiconductor wafer along at least a portion of a periphery thereof; singulating individual components from the semiconductor wafer, leaving a ring of material comprising at least in part a material of the

semiconductor wafer along the periphery thereof; and

removing at least some individual components from the adhesive-coated tape.

Pertaining to claim 1, Akram discloses "*a circular carrier or film frame* 10 that has a radiation sensitive tape 12 stretched thereover," FIG. 1; Col. 2, Lines 48-50; "a semiconductor wafer 16 has one of its surfaces adhered to an area on sticky tape side 14." FIG. 1; Col. 2, Lines 60-61; the semiconductor wafer is singulated into individual components 20, FIG.1; Col. 3, Lines 3-6; leaving a ring of material about a periphery. Akram describes the process of singulating die from a wafer in the background, stating "One technique for holding the wafer during cutting includes use of a circular metal ring which is larger than the wafer being cut...the metal ring is then positioned relative to a cutting device which orients the holder and cuts the wafer..." Col. 1, Lines 18-28.

Akram fails to anticipate amended claim 1 because it does not either expressly or inherently describe every element of the claim. Specifically, Akram fails to disclose gripping the semiconductor wafer (as opposed to circular carrier or film frame 10) in any manner. Therefore, the withdrawal of the rejection of amended claim 1 under 35 U.S.C. § 102(b) is respectfully requested.

Claims 2-6 and 10-14 are each allowable, among other reasons, for depending directly or indirectly upon independent claim 1, which is allowable.

Claim 2 is additionally allowable because Akram does not disclose gripping the semiconductor wafer by the ring of material (which, as now recited in claim 1, includes a material of the semiconductor wafer) along at least a portion of the periphery thereof during the removing of the at least some individual components.

Claims 4 and 5 are additionally allowable because Akram does not disclose forming at least a portion, or part, of the ring of material from a polymer material disposed about and contiguous with a periphery of the semiconductor wafer and of thickness at least as great as a thickness of the semiconductor wafer a periphery of the semiconductor wafer.

Claim 6 is additionally allowable because Akram does not disclose forming the ring of material disposed about a periphery from a polymer material by one of spin-coating, stereolithography or molding. Applicants can find no support for the assertion by the Office that

this subject matter is taught or suggested at Col. 2, lines 48-55 of Akram. Clarification or withdrawal of the rejection is respectfully requested.

Amended claim 29 recites a method of processing a semiconductor wafer, which comprises gripping a semiconductor wafer and singulating the semiconductor wafer into individual components while leaving an uncut peripheral ring of material thereabout.

Pertaining to claim 29, Akram discloses a method of singulating individual components while leaving an uncut peripheral ring of material thereabout. FIG. 1; Col. 2, Lines 60-65; Col. 3, Lines 1-12. Akram, however, does not disclose gripping the semiconductor wafer.

Akram fails to anticipate amended claim 29 because it does not either expressly or inherently describe every element of the claim. Specifically, Akram fails to disclose gripping the semiconductor wafer in any manner. Therefore, the withdrawal of the rejection of amended claim 29 under 35 U.S.C. § 102(b) is respectfully requested.

Claims 30-34 are each allowable, among other reasons, for depending directly or indirectly upon independent claim 29, which is allowable.

Claim 31 is additionally allowable because Akram does not disclose gripping the uncut peripheral ring of material comprising at least in part a material of the semiconductor wafer while removing the at least some singulated individual components. As discussed above, Akram discloses solely singulating and removing die components through the use of a film frame or carrier. Akram never discloses gripping the semiconductor itself or any ring of material.

Claims 33 and 34 are additionally allowable because Akram does not disclose an uncut peripheral ring of material at least in part from a polymer disposed about and contiguous with the semiconductor wafer.

Anticipation Rejection Based on U.S. Patent No. 6,524,881 to Tandy, *et al.*

Claim 25 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Tandy, *et al.*, U.S. Patent No. 6,524,881 (hereinafter "Tandy"). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 25 as amended herein recites a method of processing a semiconductor wafer,

comprising:

mounting an adhesive-coated tape to a surface of a semiconductor wafer; and

singulating individual components from the semiconductor wafer and removing at least some singulated individual components without using a film frame while the adhesive-coated tape is mounted to the surface thereof.

Tandy discloses a method of rendering a mark on semiconductor components involving several steps. In particular, the method involves reducing a cross-section of a semiconductor device, subsequently applying a tape having optical energy-markable properties to a portion of the semiconductor; and, exposing a portion of the tape with optical energy to render a mark. Col. 6, Lines 4-11.

Tandy is not drawn to, and therefore does not disclose, dicing operations in anything more than the most cursory manner. For example, Tandy describes FIG. 1 as illustrating a "semiconductor wafer 10 that *has been* subjected to a thinning process by abrasive application of a backgrinding wheel 52..., *and then* diced." (emphasis added) Tandy discusses the process in the past tense, therefore it does not and can not disclose any present method of singulating a semiconductor wafer, with or without a film frame and, more particularly, singulation *and* removal of individual components from a semiconductor device while having an adhesive-coated tape mounted thereto *and* without using a film frame. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Without any disclosure in either the figures or the text, expressly or inherently, Tandy fails to disclose the identical invention in as complete detail as in claim 25. Given that Tandy does not disclose any method of processing a semiconductor related to *singulating* a semiconductor wafer without using a film frame, it therefore cannot anticipate claim 25 and the withdrawal of the rejection under 35 U.S.C. § 102(e) is respectfully requested.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,140,151 to Akram in view of U.S. Patent No. 6,551,904 to Oka

Claims 7 through 9 and 35 through 39 stand rejected under 35 U.S.C. § 103(a) as being

unpatentable over Akram in view of Oka, U.S. Patent No. 6,551,904 (hereinafter "Oka"). Applicants respectfully traverse this rejection, as hereinafter set forth.

> M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:
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> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Akram, as noted above, fails to disclose all the limitations of claim 1, specifically gripping the semiconductor wafer. Oka fails to cure the deficiencies in the teachings of Akram.

The 35 U.S.C. § 103(a) obviousness rejections of claims 7-9 are improper because the non-obviousness of independent claim 1 precludes a rejection of claims 7-9 which depend therefrom; a dependent claim is obvious only if the independent claim from which it depends is obvious. *See* In re Fine, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, the Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to dependent claims 7-9, which depends upon non-obvious independent claim 1.

As with claim 1, Akram fails to disclose all the limitations of claim 29, specifically gripping the semiconductor wafer. Oka fails to cure the deficiencies in the teachings of Akram.

The 35 U.S.C. § 103(a) obviousness rejections of claims 35-39 are therefore improper because the non-obviousness of independent claim 29 precludes a rejection of claims 35-39 which depend therefrom. Therefore, the Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to dependent claims 35-39, which depends upon non-obvious independent claim 29.

In addition, claims 35-39 are allowable for the following reasons.

Dependent claims 35-39 each recite a method related to handling and processing a 300 mm semiconductor wafer using equipment sized to handle 200 mm semiconductor wafers. More

specifically, claims 35 recites a method of singulating a 300 mm semiconductor wafer using equipment sized to handle 200 mm semiconductor wafers. Claim 36 recites a method of singulating the 300 mm semiconductor wafer using a 200 mm semiconductor wafer saw chuck. Claim 37 recites a method of holding the 300 mm semiconductor wafer in a 200 mm semiconductor wafer pick-and-place machine chuck while removing the at least some singulated individual components. Claim 38 recites a method of handling a 300 mm semiconductor wafer with equipment sized to handle 200 mm semiconductor wafers, and claim 39 recites a method of processing the 300 mm semiconductor wafer with equipment sized to handle 200 mm semiconductor wafers.

Akram, however, fails to teach or suggest any of the limitations disclosed in claims 35-39.

Oka teaches, in figures 1A-7H and corresponding text, a method of grinding a semiconductor wafer to desired *thickness* prior to singulation.

Oka, however, does not teach or suggest handling a 300 mm *diameter* wafer in equipment designed to handle 200 mm diameter wafers in conjunction with a film frame. Specifically, Oka fails to teach or suggest singulating a 300 mm semiconductor wafer using equipment sized to handle 200 mm semiconductor wafers (claim 35); singulating the 300 mm semiconductor wafer using a 200 mm semiconductor wafer saw chuck (claim 36); holding the 300 mm semiconductor wafer in a 200 mm semiconductor wafer pick-and-place machine chuck while removing the at least some singulated individual components (claim 37); handling a 300 mm semiconductor wafer with equipment sized to handle 200 mm semiconductor wafers (claim 38); or, processing the 300 mm semiconductor wafer with equipment sized to handle 200 mm semiconductor wafers (claim 39).

Because Akram, in view of Oka, fails to teach or suggest every element of dependent claims 35-39, they are non-obvious. Further, Oka teaches a method of reducing the thickness of semiconductor wafers, not a method processing 300 mm semiconductor wafers on equipment sized to handle 200 mm wafers. Therefore, there is no motive or suggestion to combine Oka with Akram. It appears that the Office is undertaking a rejection of claims 35-39 improperly based, in hindsight, relying on Applicants' own disclosure for a motivation or suggestion to

combine the references. Thus, claims 35-39 are additionally allowable an on-obvious and the withdrawal of their rejection under 35 U.S.C. §103(a) is respectfully requested.

Obviousness Rejection Based on U.S. Patent No. 6,524,881 to Tandy, *et al.*, in view of U.S. Patent 6,551,906 to Oka

Claims 26 through 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tandy in view of Oka. Applicants respectfully traverse this rejection, as hereinafter set forth.

As discussed above, because Tandy does not disclose all of the elements of independent claim 25, it is non-obvious. Oka fails to cure the deficiencies in the teachings of Tandy.

The 35 U.S.C. § 103(a) obviousness rejections of claims 26-28 are therefore improper because the non-obviousness of independent claim 25 precludes a rejection of claims 26-28 which depend therefrom; a dependent claim is obvious only if the independent claim from which it depends is obvious. *See* In re Fine, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, the Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to dependent claims 26-28, which depends upon non-obvious independent claim 25.

In addition, claims 26-28 are allowable for the following reasons.

Pertaining to claim 26, Tandy fails to teach or suggest singulating a 300 mm semiconductor wafer using equipment sized to handle 200 mm semiconductor wafers.

Pertaining to claim 27, Tandy fails to teach or suggest singulating the 300 mm semiconductor wafer using a 200 mm semiconductor wafer saw chuck.

Pertaining to claim 28, Tandy fails to teach or suggest holding the 300 mm semiconductor wafer in a 200 mm semiconductor wafer pick-and-place machine chuck while removing the at least some singulated individual components.

Oka teaches in figures 1A-7H and corresponding text a method of grinding a semiconductor wafer to desired *thickness* prior to singulation.

Like Tandy, however, Oka fails to teach or suggest handling a 300 mm *diameter* wafer in equipment designed to handle 200 mm diameter wafers in conjunction with a film frame. Specifically, Oka fails to teach or suggest singulating a 300 mm semiconductor wafer using

equipment sized to handle 200 mm semiconductor wafers (claim 26); singulating the 300 mm semiconductor wafer using a 200 mm semiconductor wafer saw chuck (claim 27); holding the 300 mm semiconductor wafer in a 200 mm semiconductor wafer pick-and-place machine chuck while removing the at least some singulated individual components (claim 28).

Because Tandy, in view of Oka, fails to teach or suggest every element of dependent claims 26-28, they are non-obvious. Further, Oka teaches a method of reducing the thickness of semiconductor wafers, not a method processing 300 mm semiconductor wafers on equipment sized to handle 200 mm wafers. Therefore, there is no motive or suggestion to combine Oka with Tandy. As noted above, it appears that the Office is relying upon Applicants' own disclosure for a motivation or suggestion to combine the references. Thus, claims 26-28 are additionally allowable and the withdrawal of their rejection under 35 U.S.C. §103(a) is respectfully requested.

ENTRY OF AMENDMENTS

The amendments to claims 1, 2, 3, 4, 5, 12, 25, 29, 31, 33 and 34 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1-14 and 25-39 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

Joseph A. Walkowski
Registration No. 28,765
Attorney for Applicant(s)
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

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Attachment: Replacement Drawings (3 sheets)

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